CLAIMS

1. A method for retaining error-control code protection across block-size discontinuities occurring between incoming information, having incoming data formatted into ingress data blocks and ingress headers, one ingress header associated with each ingress data block and conveying information about the each ingress data block, and outgoing information having the incoming data reformatted into egress data blocks with sizes different from the ingress data blocks and egress headers, one egress header associated with each egress data bock and conveying information about the each egress data block, the method comprising:

   (a) generating a code check from data in an ingress data block and from an ingress header associated with the ingress data block;

   (b) generating a code check from the code check generated in step (a) and an egress header associated with an egress data block derived from in the ingress data block; and

   (c) generating the outgoing information by combining the egress header with the associated egress data block and code check generated in step (b).

2. The method of claim 1 wherein step (b) comprises:

   (b1) generating a code check from the egress header;

   (b2) subtracting a portion of the code check generated from the associated ingress header in step (a) from the code check generated in step (b1); and

   (b3) adding the code check generated in step (a) to the code check generated in step (b2).

3. The method of claim 2 wherein step (b2) comprises adding the inverse of the portion of the code check generated from the ingress header in step (a) to the code check generated in step (b1).

4. The method of claim 1 wherein step (a) further comprises:

(a1) modifying the code check generated from data in the ingress data block and the associated ingress header to compensate for non-data bits added to the ingress data block.

5. The method of claim 4 wherein step (a1) comprises rotating the code check generated from data in the ingress data block and associated ingress header to compensate for non-data bits added to the ingress data block.

6. The method of claim 1 wherein step (a) further comprises:

(a2) modifying the incoming information to compensate for non-data bits added to the ingress data block.

7. The method of claim 1 wherein step (c) comprises concatenating the egress header with the associated egress data block and the code check generated in step (b).

8. The method of claim 1 wherein step (a) comprises generating a one's-complement sum of successive *n*-bit binary words included in the ingress data block and the associated ingress header.

9. The method of claim 1 wherein step (b) comprises generating a one's-complement sum of successive *n*-bit binary words included in the egress header.

10. The method of claim 1 wherein step (a) comprises generating a term-by-term modulo-two sum of successive *n*-bit binary words included in the ingress data block and the associated ingress header.

11. The method of claim 1 wherein step (b) comprises generating a term-by-term modulo-two sum of successive *n*-bit binary words included in the egress header.

12. The method of claim 1 wherein step (a) comprises generating the residue of the ingress data block and the associated ingress header modulo a generator polynomial.

13. The method of claim 1 wherein step (b) comprises generating the residue of the egress data block modulo a generator polynomial.

14. The method of claim 1 wherein the incoming information includes an incoming code check associated with each ingress data block and step (a) further comprises comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check.

15. Apparatus for retaining error-control code protection across block-size discontinuities occurring between incoming information, having incoming data formatted into ingress data blocks and ingress headers, one ingress header associated with each ingress data block and conveying information about the each ingress data block, and outgoing information having the incoming data reformatted into egress data blocks with sizes different from the ingress data blocks and egress headers, one egress header associated with each egress data bock and conveying information about the each egress data block, the apparatus comprising:

an ingress encoder that generates an ingress code check from data in an ingress data block and from an ingress header associated with the ingress data block;

an egress encoder that generates a egress code check from an egress header associated with an egress data block derived from in the ingress data block and from the ingress code check; and

a multiplexer that generates the outgoing information by combining the egress header with the associated egress data block and the egress code check.

16. The apparatus of claim 15 wherein the egress encoder comprises:

an outgoing encoder that generates an egress code check from the egress header and from internal contents;

a controller that subtracts a portion of the ingress code check generated from the associated ingress header from the outgoing encoder contents and adds the ingress code check to the outgoing encoder contents.

17. The apparatus of claim 16 wherein the controller further comprises a mechanism that modifies the ingress code check to compensate for non-data bits added to the ingress data block.

18. The apparatus of claim 16 wherein the controller comprises a mechanism that rotates the ingress code check to compensate for non-data bits added to the ingress data block.

19. The apparatus of claim 16 wherein the controller adds the inverse of the portion of the code check generated from the ingress header by the ingress encoder to the outgoing encoder contents.

20. The apparatus of claim 15 further comprising a mechanism that modifies the incoming information to compensate for non-data bits added to the ingress data block.

21. The apparatus of claim 15 wherein the multiplexer comprises a mechanism that concatenates the egress header with then associated egress data block and the egress code check.

22. The apparatus of claim 15 wherein the ingress encoder comprises a one's-complement encoder that generates a one's-complement sum of successive *n*-bit binary words included in the ingress data block and the associated ingress header.

23. The apparatus of claim 15 wherein the outgoing encoder comprises a one's-complement encoder that generates a one's-complement sum of successive *n*-bit binary words included in the egress header.

24. The apparatus of claim 15 wherein the ingress encoder comprises a vertical-parity-check encoder that generates a term-by-term modulo-two sum of successive *n*-bit binary words included in the ingress data block and the associated ingress header.

25. The apparatus of claim 15 wherein the outgoing encoder comprises a vertical-parity-check encoder that generates a term-by-term modulo-two sum of successive *n*-bit binary words included in the egress header.

26. The apparatus of claim 15 wherein the ingress encoder comprises a cyclic-residue-code encoder that generates the residue of the ingress data block and the associated ingress header modulo a generator polynomial.

27. The apparatus of claim 15 wherein the outgoing encoder comprises a vertical-parity-check encoder that generates the residue of the egress data block modulo a generator polynomial.

28. The apparatus of claim 15 wherein the incoming information includes an incoming code check associated with each ingress data block and the apparatus further comprises a comparator for comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check.

29. A computer program product for retaining error-control code protection across block-size discontinuities occurring between incoming information, having incoming data formatted into ingress data blocks and ingress headers, one ingress header associated with each ingress data block and conveying information about the each ingress data block, and outgoing information having the incoming data reformatted into egress data blocks with sizes different from the ingress data blocks and egress headers, one egress header associated with each egress data bock and conveying information about the each egress data block, the computer program product comprising a computer usable medium having computer readable program code thereon, including:

program code that generates an ingress code check from data in an ingress data block and from an ingress header associated with the ingress data block;

program code that generates a egress code check from the ingress code check and an egress header associated with an egress data block derived from in the ingress data block; and

program code that generates the outgoing information by combining the egress header with the associated egress data block and the egress code check.

30. The computer program product of claim 29 wherein the program code that generates a egress code check comprises:

program code that generates an egress code check from the egress header;

program code that subtracts a portion of the ingress code check generated from the associated ingress header from the egress code check; and

program code that adds the ingress code check to the egress code check.

31. The computer program product of claim 30 wherein the program code that subtracts a portion of the ingress code check from the egress code check comprises program code that adds the inverse of the portion of the ingress code check to the egress code check generated.

32. The computer program product of claim 29 wherein the program code that generates an ingress code check further comprises program code that modifies the ingress code check to compensate for non-data bits added to the ingress data block.

33. The computer program product of claim 32 wherein the program code that modifies the ingress code check comprises program code that rotates the ingress code check to compensate for non-data bits added to the ingress data block.

34. The computer program product of claim 29 wherein the program code that computes the ingress code check further comprises program code that modifies the incoming information to compensate for non-data bits added to the ingress data block.

35. The computer program product of claim 29 wherein the program code that generates the outgoing information comprises program code that concatenates the egress header with the associated egress data block and the egress code check.

36. The computer program product of claim 29 wherein the program code that generates the ingress code check comprises program code that generates a one's-complement sum of successive *n*-bit binary words included in the ingress data block and the associated ingress header.

37. The computer program product of claim 29 wherein the program code that generates the egress code check comprises program code that generates a one's-complement sum of successive *n*-bit binary words included in the egress header.

38. The computer program product of claim 29 wherein the program code that generates the ingress code check comprises program code that generates a term-by-term modulo-two sum of successive *n*-bit binary words included in the ingress data block and the associated ingress header.

39. The computer program product of claim 29 wherein the program code that generates the egress code check comprises program code that generates a term-by-term modulo-two sum of successive *n*-bit binary words included in the egress header.

40. The computer program product of claim 29 wherein the program code that generates the ingress code check comprises program code that generates the residue of the ingress data block and the associated ingress header modulo a generator polynomial.

41. The computer program product of claim 29 wherein the program code that generates the egress code check comprises program code that generates the residue of the egress data block modulo a generator polynomial.

42. The computer program product of claim 29 wherein the incoming information includes an incoming code check associated with each ingress data block and wherein the program code that generates the ingress code check further comprises program code that compares the ingress code check to the incoming code check and generates an error when the ingress code check does not equal the incoming code check.

43. A computer data signal embodied in a carrier wave for retaining error-control code protection across block-size discontinuities occurring between incoming information, having incoming data formatted into ingress data blocks and ingress headers, one ingress header associated with each ingress data block and conveying information about the each ingress data block, and outgoing information having the incoming data reformatted into egress data blocks with sizes different from the ingress data blocks and egress headers, one egress header associated with each egress data bock and conveying information about the each egress data block, the computer data signal comprising:

program code that generates an ingress code check from data in an ingress data block and from an ingress header associated with the ingress data block;

program code that generates a egress code check from the ingress code check and an egress header associated with an egress data block derived from in the ingress data block; and

program code that generates the outgoing information by combining the egress header with the associated egress data block and the egress code check.